

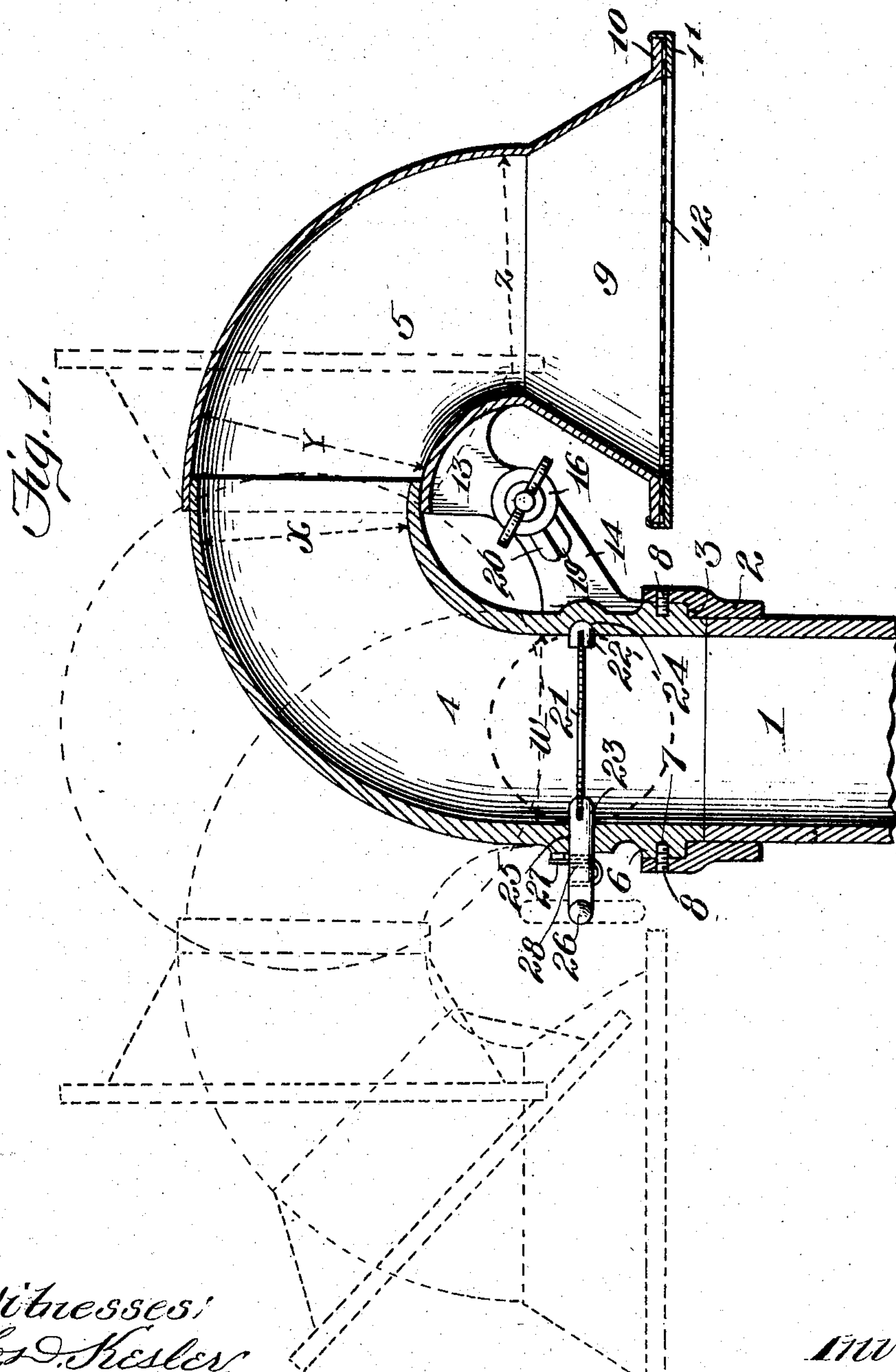
No. 791,397.

PATENTED MAY 30, 1905.

D. F. ASBURY.
ELBOW TERMINAL FOR VENTILATION PIPING.

APPLICATION FILED JAN. 30, 1904.

2 SHEETS—SHEET 1.



Witnesses:
C. D. Kessler,
James L. Morris, Jr.

Inventor
Dorsey F. Asbury
By
James L. Morris,
Atty.

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2 SHEETS—SHEET 2.

Fig. 2.

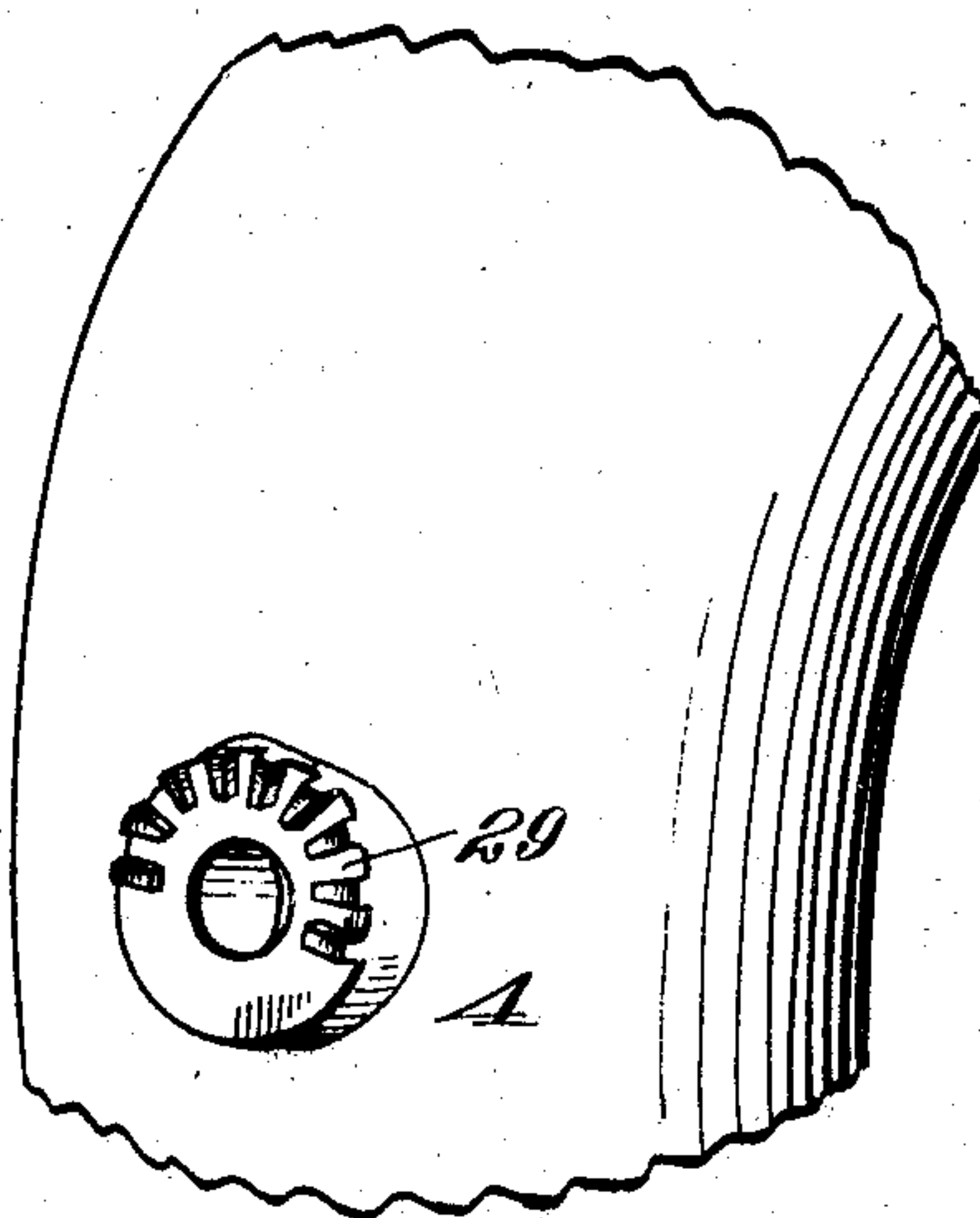
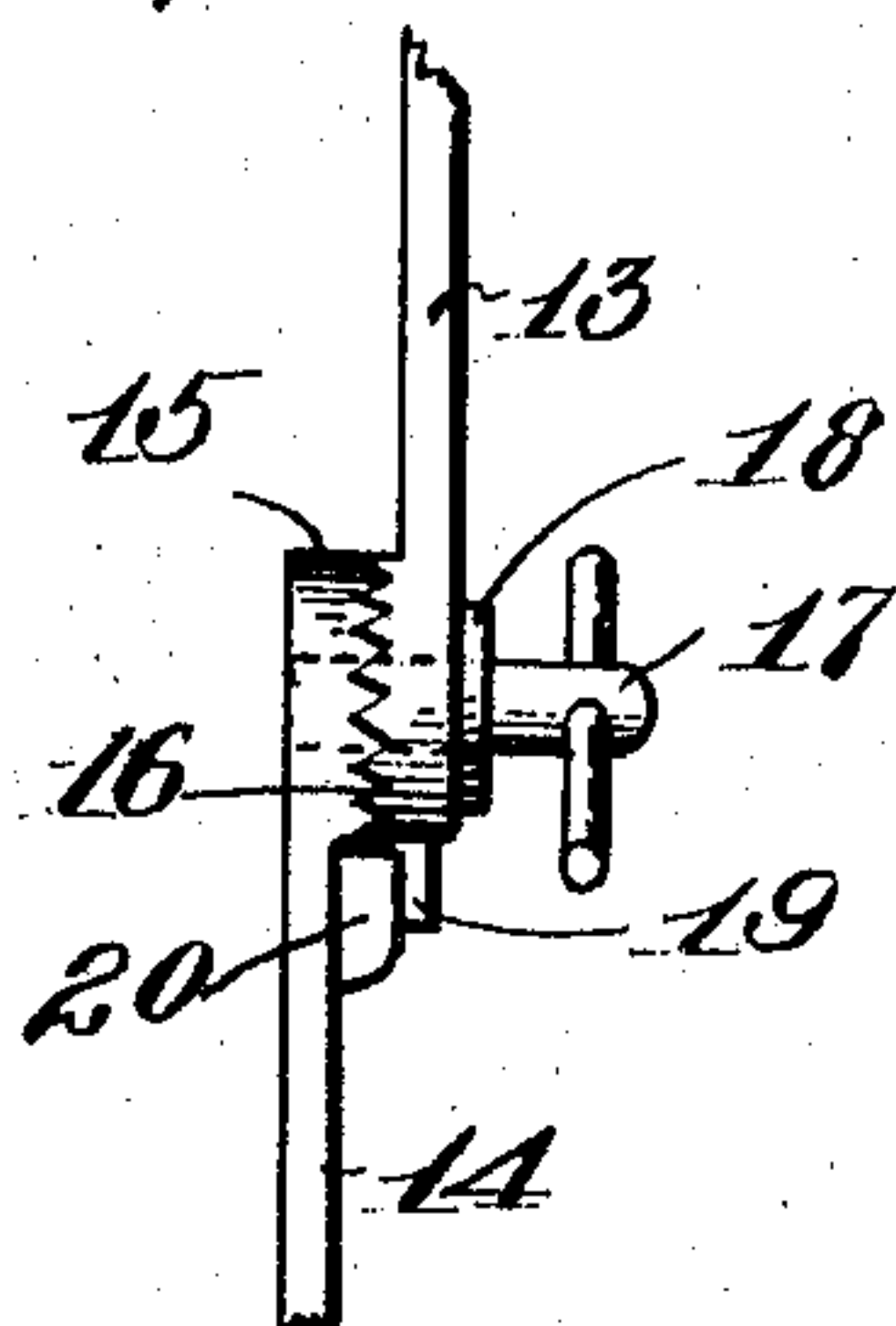


Fig. 3.

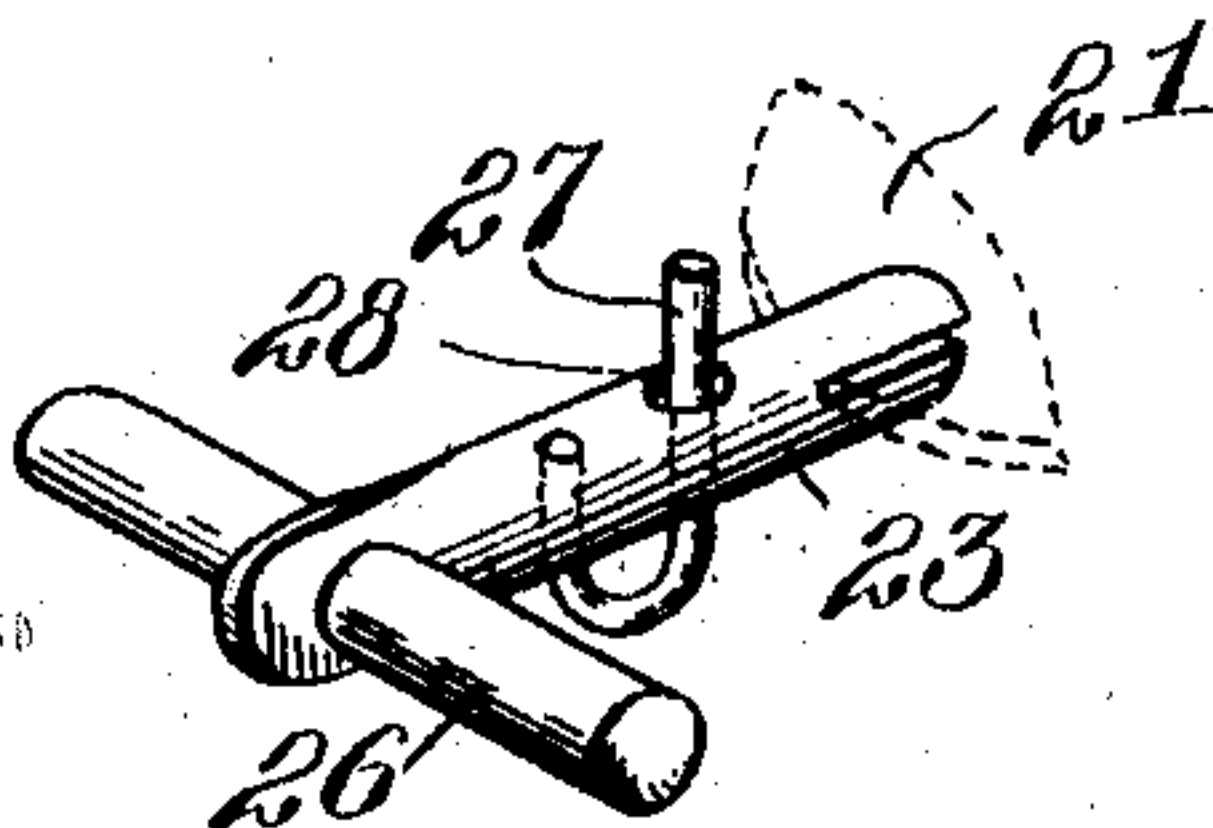
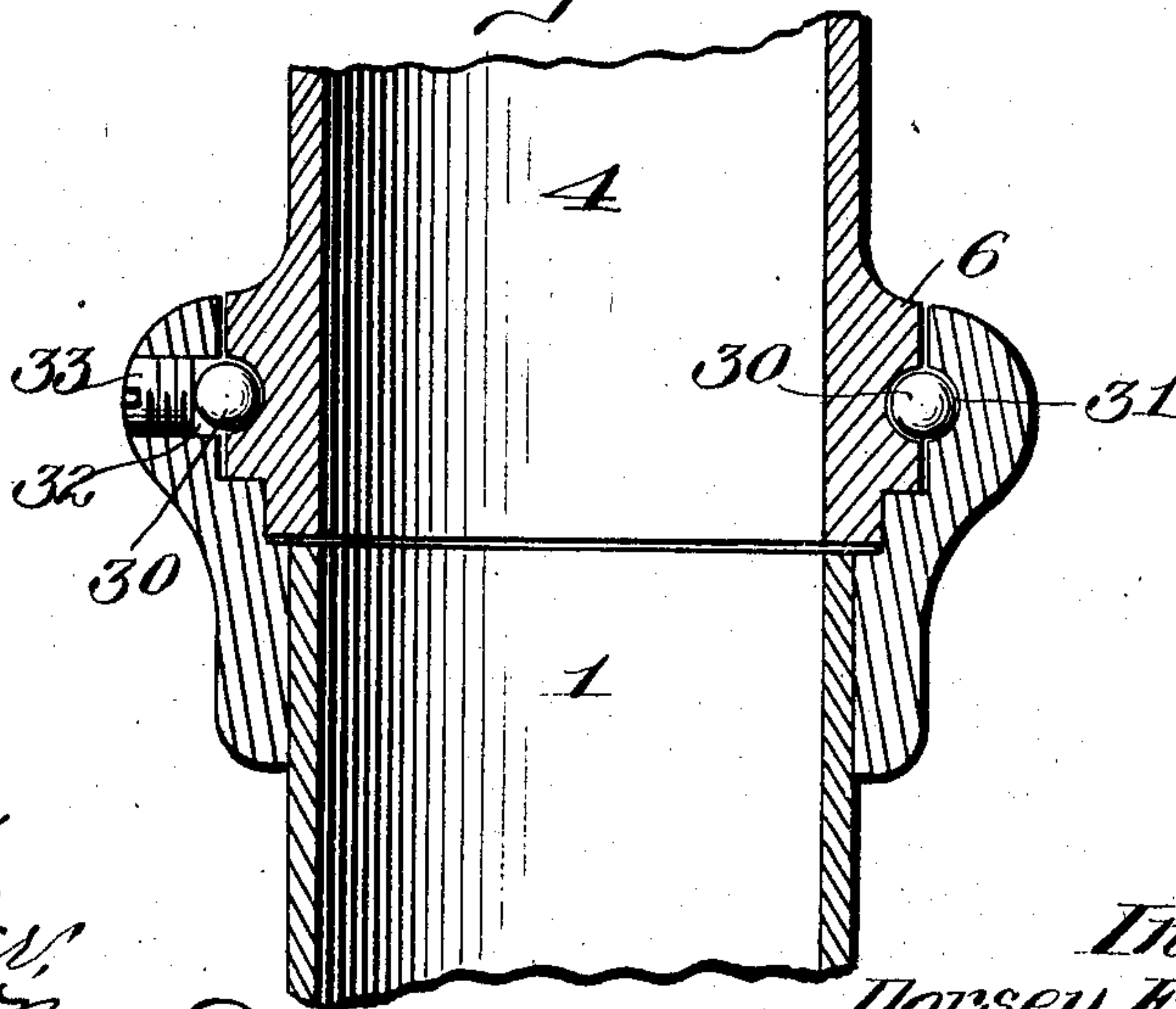


Fig. 4.



Witnesses:
C. D. Kessler,
James L. Norris, Jr.

Inventor
Dorsey F. Asbury
By James L. Norris,
Attorney.

UNITED STATES PATENT OFFICE.

DORSEY F. ASBURY, OF SEATTLE, WASHINGTON.

ELBOW-TERMINAL FOR VENTILATION-PIPING.

SPECIFICATION forming part of Letters Patent No. 791,397, dated May 30, 1905.

Application filed January 30, 1904. Serial No. 191,335.

To all whom it may concern:

Be it known that I, DORSEY F. ASBURY, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented new and useful Improvements in Elbow-Terminals for Ventilation-Piping, of which the following is a specification.

This invention relates to terminals for ventilating-pipes.

The object of the invention is in a ready, certain, and effective manner to effect ventilation of an apartment of any character without discomfort to the occupants, as from the presence of an objectionable draft; to direct the current of air in any desired direction, either vertically, horizontally, or at an upward or downward angle; in a positive manner to prevent baffling or choking of the air within the terminal, with attending diminution in its force of projection; to effect rapid adjustment and positive holding of the terminal in any desired adjustment to cause projection of the air-current in the desired direction, and, generally, to simplify the construction and render more efficient in use devices of this character.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists, generally stated, in a terminal for ventilating-pipes, comprising a plurality of curved telescopic sections provided with means for adjusting the discharge or outlet portion of the terminal at any desired angle, together with a novel arrangement of mechanism for permitting rotation of the terminal about a horizontal or other axis. As generally constructed the inlet-pipe to which the terminal is secured will be arranged vertically, and it is therefore essential that suitable means should be provided to permit of the terminal being swung around the pipe with readiness and ease and, without danger of binding, to effect assemblage between the inlet-pipe and the terminal as to preclude possibility of accidental separation in use. This feature is also essential irrespective of the disposition of the inlet-pipe, as in some instances the latter may be disposed in a horizontal instead of a vertical plane. The assemblage of the terminal

within the pipe is effected by the provision on the pipe of a collar in which the lower end of the terminal is disposed, and combined with the collar and coacting with the housed end of the terminal are means for holding the two parts assembled and to permit rotation of the terminal with relation to the inlet-pipe. In the simpler form of the embodiment of the invention this assembling means may consist of a plurality of screws or studs carried by the collar and engaging a peripheral groove or guide formed in the lower portion of the terminal, and this form will be thoroughly effective where the terminal is of small size, but where of large size, which might render the easy turning of the terminal somewhat difficult, antifriction-bearings, preferably in the nature of balls, are disposed between the housed end of the terminal and the collar, and as a matter of further specific improvement it is designed that the antifriction-bearings shall constitute a locking means for holding the end of the terminal combined with the collar. To effect this result, the collar is provided on its inner side or surface with a race semicircular in cross-section and with a lateral opening, and the outer side of the lower end of the terminal is provided with a similar race alining with that in the collar and forming therewith a race circular in cross-section, and into the race thus formed antifriction-bearings, preferably in the nature of balls, are placed through the opening in the collar, after which the said opening is closed. It will be seen from this arrangement that the inlet-pipe and terminal are positively locked against separation by the antifriction-bearings, while at the same time perfect freedom of action for turning of the terminal in the collar is secured.

As a matter of further improvement and as above referred to it is essential in devices of this character that baffling or choking of air in its passage through the terminal be obviated, and in this instance it is secured by gradually increasing the cross-sectional area of the terminal from its lower to its discharge end or approximately to its discharge end in direct proportion to the decrease in the velocity of the air, and by this simple expedient it will be seen that the same volume of air

will escape from the terminal as would from the pipe were there no terminal connected to said pipe.

Further and more specific details of construction and advantages accruing from the arrangement employed will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention, together with a slightly-modified form thereof, capable of carrying the same into effect, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof.

In the drawings, Figure 1 is a view in elevation, partly in section, exhibiting a preferred form of the invention, various adjustments of the device being indicated by dotted lines. Fig. 2 is a detail view of an adjusting device for holding one section of the terminal in any fixed position with relation to the other. Fig. 3 is a detail view of a valve-locking device. Fig. 4 is a sectional detail view of a modified form of connection between the terminal and the inlet-pipe.

Referring to the drawings and to Fig. 1 thereof, 1 designates the inlet-pipe, which may lead to any suitable point of supply and may be disposed within a room or any other apartment or place to be ventilated. As here-in shown, the pipe is disposed in a vertical position; but it is to be understood that, if preferred, it may be arranged in a horizontal position without departing from the scope of the invention, and as this will be readily understood detailed illustration thereof is deemed unnecessary. The upper end of the inlet-pipe has combined with it a collar or casting 2, which may be shrunk or riveted or otherwise secured to the pipe, the upper end of the collar being of greater diameter than the pipe to present a seat 3, the function of which will presently appear.

The terminal comprises two curved sections 4 and 5, each of these sections being in this instance segments of ninety degrees of a circle, by which arrangement when the inlet-pipe is disposed vertically the discharge end of the section 5 may be disposed to discharge downwardly in a line parallel with the inlet-pipe; but where the inlet-pipe is disposed on a horizontal plane to secure this discharge the sections will have to be of segments of forty-five degrees of a circle. The sections 4 and 5 are by preference made of cast-iron, although they may be of any other suitable material or otherwise constructed, and the section 4 is provided adjacent to its lower end with a circular flange or rib 6, provided with a peripheral groove 7, to be engaged by the inner ends of screws or pins 8, carried by the

upper portion of the collar, the coaction between the screws or pins being such as to permit ready rotation of the terminal without danger of accidental separation from any cause. As shown in Fig. 1, the lower end of the section 4 rests upon the upper end of the inlet-pipe; but this is not essential, as it may terminate short of the pipe.

As above stated, it is essential to the production of a thoroughly efficient device of this character that baffling or choking of the air within the terminal be obviated in order that the velocity of discharge may not be impeded, and to effect this discharge the internal diameter of the terminal, by which is meant the sections 4 and 5, gradually increases from a point adjacent to the lower housed end of the terminal to a point adjacent to the discharge end thereof, the external diameter of the section 4 remaining the same in order to permit telescopic action, as indicated by dotted lines in Fig. 1. As a general proposition it may be stated that the internal diameter of the section 4 from the point W to the point X will increase in the proportion of ten per cent. and the internal diameter of the section 5 from the point Y to the point Z will increase in like proportion; but it is to be understood that this stated increase is not to be construed as being the only one that could be employed, as it may be increased or diminished if found necessary or desirable.

Combined with the outer or discharge end of the section 5 in any suitable manner, either rigidly or detachably, is a flared or bell mouth 9, the free end of which is provided with a flange 10, to be engaged by an overturned ring 11, which serves to hold a screen 12 in position, the function of the screen, as will be understood, being to prevent the admission of extraneous material to the terminal or the discharge therefrom of dust, dirt, or the like.

It is designed that the sections 4 and 5 shall be so constructed that while permitting ready telescopic movement for the purpose of various adjustments, the escape of air at the point of juncture between two sections will be precluded, and for this purpose the external of the portions will be properly dressed or finished to secure this result.

The means herein shown for effecting adjustment of the section 5 with relation to the section 4 and for holding it in its adjusted position comprises a downward-projecting arm 13, carried by the section 5, and an upward-projecting arm 14, carried by the section 4, the end of each of the arms terminating in a boss 15 and 16, respectively, the opposed faces of which are serrated or toothed to effect positive locking between them. To clamp the bosses together, thus to hold the section 5 in its adjusted position, a locking-screw 17 is provided, which is threaded in the arm 14 and has a shoulder 18 bearing upon the outer side of the arm 13. It will be seen that

by loosening the locking-screw the opposed faces of the bosses will be freed from engagement with each other, so that adjustment of the section 5 may be secured, whereupon when the locking-screw is again operated to clamp the bosses together the section 5 will be positively held against dropping. To relieve the bosses and arms from undue strain, due to the weight of the section 5, and also to prevent any possibility of accidental separation of the section 5 from the section 4 in the event that the locking-screw be not tightened, the arm 13 is provided with a lug or boss 19, which is adapted to abut a similar lug or boss 20 on the arm 14. Should it be desired to detach the section 5 from the section 4 for any purpose, the locking-screw will be removed from the bosses, thereby leaving the latter free for separation from each other, and by giving the section 5 a slight turn the lugs or bosses 19 and 20 will be moved out of engagement with each other, so that the separation of the sections may be secured.

In devices of this character it is of course essential that suitable means be provided for regulating the passage of air therethrough, and to effect this result an ordinary valve 21 of disk type is employed, said valve being secured to journals 22 and 23, the former of which has its ends seated in a bearing 24 on the inner wall of the section 4, and the latter working in a bearing 25, formed in the opposite side of the said section. The outer end of the journal 23 is provided with a handhold 26, by which the valve may be turned. To hold the valve at any desired adjustment within the section 4, a locking device is employed, which in this instance consists of a spring 27, one end of which is secured in the journal 23, thence bent upon a curve and projected upward through a slot 28 in the said journal, the free end of the spring being adapted to traverse a rack-plate 29, projecting from one side of the section 4. The coaction between the spring and rack-plate may be such that when sufficient torsional strain is applied to the handhold the spring will be forced out from the teeth of the rack-plate, or, if preferred, the coaction between these parts may be such that it may be necessary to move the spring out of engagement with the rack-plate before the valve may be turned.

In the form of embodiment of the invention shown in Fig. 4 antifriction-bearings 30 are provided between the lower end of the section 4 and the collar 2, the screws or pins of course in this instance being dispensed with. The latter being the fact, it is essential that the disposition of the ball-bearings be such that in addition to their usual function they will constitute a means of holding the terminal positively assembled with the inlet-pipe. To effect this result, the inner face of the upper portion of the collar is provided with a race 31, which is semicircular in

cross-section, and the flange or rib 6 of the section 4 is provided with a similar race, the two races, when the terminal is in position, presenting a race circular in cross-section, and in this race the bearings 30 are disposed. The collar is provided on one side with an opening 32, through which the bearings are supplied to the race, the opening being normally closed by a plug 33, which may have a threaded or other engagement with the collar to hold it in position, the inner end of the closure when a plug being concaved to conform to the periphery of the bearings and to constitute an unbroken continuation of the race. It will be noted by Fig. 4 that the bearings 30 span the point of juncture between the section 4 and the collar, and thereby present a positive lock to prevent accidental disconnection of the parts in use.

While the device of this invention is described as being adapted more particularly for ventilating purposes, it is to be understood that it may be used for conveying liquids, as if the joints between the parts are packed this result may be secured.

If preferred or found necessary, additional sections of pipe, either flexible or otherwise, may be secured to the section 5 and be carried to any point of the room or closure desired. When the latter arrangement is adopted, the terminal may be employed in connection with a cotton-gin, linting-machine, or sawmill.

It will be seen from the foregoing description that in the device disclosed provision is made to meet every emergency that will be required in a thoroughly-effective device of this character and, further, that the simplicity of construction of the parts is such that danger of derangement in use is reduced to a minimum and facility of repairs when needed is secured.

Having thus described the invention, what is claimed is—

1. A structure of the class described involving a plurality of curved tubular telescopically-associated members of progressively-increasing internal diameter from one end toward the other end thereof.

2. In a structure of the class described, the combination of a pipe, and a plurality of curved tubular telescopically-associated members of progressively-increasing sectional area from the pipe to the atmospheric end thereof, one of said members being rotatively associated with said pipe.

3. A structure of the class described involving a plurality of curved tubular telescopically-associated members of progressively-increasing sectional area from one end toward the other end thereof, the terminal portion of the outer member being of flared form.

4. A structure of the class described involving a plurality of curved tubular telescopically-associated members of progressively-in-

creasing internal diameter from one end to-
ward the other end thereof, an arm carried
by each member, a serrated boss on each arm,
the serrated faces of the bosses being opposed,
5 and means, constituting the center of the
curved members, for clamping the bosses to-
gether.

5. A structure of the class described, com-
prising a plurality of curved telescopic sec-
10 tions, means for locking one section at the
desired adjustment with relation to the other
section, and stops carried by the locking means
for preventing disconnection of the sections.

6. In a structure of the class described, a
15 plurality of telescopic sections, one of which
is provided with a rack-plate, a valve arranged
in one of the sections and provided with a
portion projecting outside of said section, the
projecting portion being slotted, and a bent
20 spring fitted within the slot of said projecting
portion, one branch of the spring being fas-
tened to said projecting portion and the other
branch thereof being arranged to traverse the
rack-plate.

25 7. A structure of the class described involv-
ing a plurality of curved tubular telescopic-
ally-associated members of progressively-in-
creasing internal diameter from one end to-

ward the other end thereof, the terminal por-
tion of the outer member being provided with 3
a screen.

8. A structure of the class described involv-
ing a plurality of curved tubular telescopic-
ally-associated members of progressively-in-
creasing internal diameter from one end to 3
ward the other end thereof, the external di-
ameter of the inner member being uniform
throughout the length thereof.

9. In a structure of the class described, the
combination of a pipe, a plurality of curved 4
tubular telescopically-associated members of
progressively-increasing diameter from the
pipe to the atmospheric end thereof, one of
said members being rotatively associated with
said pipe, a manually-operable damper for 4
controlling the flow of air through said mem-
bers, and means for locking the latter in ad-
justed relations.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit- 5
nesses.

DORSEY F. ASBURY.

Witnesses:

L. A. OAKES,
CHAS. W. CULVER.